

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



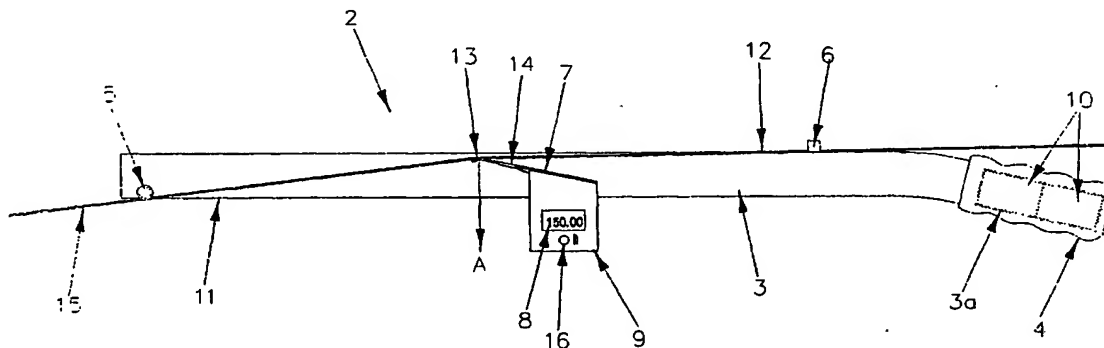
(43) International Publication Date
11 March 2004 (11.03.2004)

PCT

(10) International Publication Number
WO 2004/020964 A1

- (51) International Patent Classification⁷: **G01L 5/10** (74) Agent: BUCHANAN, Elspeth, Victoria; P.L. Berry & Associates, P.O. Box 1250, Christchurch (NZ).
- (21) International Application Number: PCT/NZ2003/000191 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 29 August 2003 (29.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 521094 30 August 2002 (30.08.2002) NZ (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): HOLMES SOLUTIONS LIMITED [NZ/NZ]; 61 Cambridge Terrace, Christchurch (NZ).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): BULL, Desmond, Kenneth [NZ/NZ]; 19, Thornwood Place, Redwood, Christchurch (NZ). ALLINGTON, Christopher, James [NZ/NZ]; 118 Roker Street, Somerfield, Christchurch (NZ). NEWTON, Richard, John [GB/NZ]; 3, Davie Street, Kaiapoi (NZ).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: APPARATUS FOR TESTING TENSION OF ELONGATED FLEXIBLE MEMBER



(57) Abstract: A handheld apparatus (2) for checking the tension of the wire (15) includes a support (3) with two spaced pegs (5,6) mounted on it. A spring (7) mounted on the support (3) between the two pegs. A strain gauge (14) is mounted on the spring and measures the displacement of the spring (7). A fully portable power supply is connected to a computer (9) with a readout (8). In use, the wire (15) is arranged in a predetermined path over and/or under the pegs (5,6) so that it presses against the spring (7). The amount the spring (7) is displaced, which is related to the tension, is measured by the signal from the strain gauge. The signal is passed to the computer (9), which calculates the tension from this measurement and displays the result on the readout (8).

WO 2004/020964 A1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ03/00191

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: G01L 5/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI, JAPIO: G01L 5/-, wire, rope, tension, tautness, measure, test, portable, spring and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 9-005181 A (SHIMPO IND CO LTD) 10 January 1997 Figures	
A	SU 1763913 A (KH AVIATIONNYJ INSTITUT) 23 September 1992 Figure 1	
A	DE 19605036 A (HEICKS INDUSTRIELEKTRONIK GMBH) 14 August 1997 Columns 2, 3, figures	

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
28 October 2003

Date of mailing of the international search report

03.11.03

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaaustralia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

GREG POWELL

Telephone No : (02) 6283 2308

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ03/00191

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98/51545 A (AUTOMOTIVE SYSTEMS LABORATORY INC) 19 November 1998 Abstract, page 7 line 18-page 9 line 6, figures 1, 2	
A	US 4759226 A (LEURER) 26 July 1988 Column 1 lines 6-14, 58-68, column 2 lines 30-40, figures	
A	US 2285471 A (STURGESS) 9 June 1942 Figures	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/NZ03/00191

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
JP	9-005181	NONE			
SU	1763913	NONE			
DE	19605036	NONE			
WO	98/51545	CA	2259291	EP	0910523
		US	5965827	KR	2000023738
US	4759226	CH	669778	DE	3506698
		GB	2171801	JP	61-212738
					END OF ANNEX